

## Lyman Lake Total Maximum Daily Load

### WHAT IS A TOTAL MAXIMUM DAILY LOAD?

Total Maximum Daily Load (TMDL) is a term used to describe the amount of a pollutant that a stream or lake can receive and still meet water quality standards. A TMDL study identifies sources of pollution and potential reductions needed to attain standards. **Point sources** (such as municipal or industrial discharges) and **nonpoint sources** (such as runoff from urban or agricultural lands, and natural background) are considered in calculating the TMDL. The study must also account for seasonal variation and include a margin of safety.

### WHY DO WE PREPARE A TMDL?

The objective of the federal Clean Water Act is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. To fulfill this objective, states assess their surface waters and identify which waters do not meet state surface water quality standards. A TMDL must be completed for each pollutant "impairing" (i.e. not meeting surface water quality standards) these water bodies.

### TMDL STUDY AND IMPLEMENTATION

The TMDL study will examine the source and the extent of the water quality impairment, providing the appropriate information necessary for planning implementation actions designed to achieve surface water quality standards. Whereas the TMDL study establishes a pollution budget for an impaired surface water, the accompanying TMDL implementation plan provides an action plan outlining the affordable, efficient, and effective alternatives to restore water quality.

During both the TMDL study and implementation planning processes, the Arizona Department of Environmental Quality (ADEQ) involves stakeholders by coordinating public meetings and encouraging comments and input. Additionally, ADEQ will help stakeholders identify funding sources (such as Water Quality Improvement Grants) that can help pay for water quality improvements.

### FOR MORE INFORMATION

ADEQ encourages interest and involvement in the Lyman Lake TMDL study. For more information on TMDL studies, please refer to the ADEQ Web site: [www.azdeq.gov/environ/water/assessment/tmdl.html](http://www.azdeq.gov/environ/water/assessment/tmdl.html)

### LYMAN LAKE TMDL BACKGROUND

Lyman Lake is located in the east-central portion of Arizona in the southern half of Apache County. Lyman Lake is found on U.S. Highway 180/191 approximately 11 miles south of St. Johns. Mercury is a naturally occurring metallic element. Mercury has many everyday uses and applications ranging from the manufacture of industrial chemicals and electronic applications to historic dental uses. Although a useful substance, mercury is highly toxic and persists a long time in the environment.

The primary way that humans are exposed to mercury is by the consumption of fish that have elevated concentrations of mercury in their tissue. The accumulation of mercury in fish is a well-recognized and documented environmental problem throughout the United States.

Water quality standards have been established in Arizona and around the country to protect both human health and aquatic and wildlife communities. Most mercury exceedances are found not in water samples but in fish tissue samples, posing a threat to people who consume these fish. This means that these waters are safe to swim in, but consumption of fish must be restricted or limited to specific guidelines.

Mercury levels detected within sampled fish tissue at Lyman Lake have been identified by the United States Environmental Protection Agency (EPA) as high enough to threaten human health, exceeding the methylmercury fish tissue criteria of 0.3 mg/kg. Exceedances of the criteria prompted the EPA to place Lyman Lake on Arizona's 2004 303(d) list of impaired waters. In October 2002, ADEQ and the Arizona Game & Fish Department issued a fish consumption advisory for all fish species in Lyman Lake. Please refer to the Fish Consumption Advisories Fact Sheet via ADEQ's Web site for more information: [www.azdeq.gov/environ/water/assessment/download/fish0305.pdf](http://www.azdeq.gov/environ/water/assessment/download/fish0305.pdf).

**ADEQ Action:** ADEQ is required to analyze the mercury impairments associated with the lake in a TMDL study. The TMDL study intends to link the mercury inputs to the chemistry in the lake in order to set mercury targets for achieving the methylmercury fish tissue criteria. Implementation measures will be aimed at lowering the methylation of mercury in the lake system meanwhile lowering the incoming loads from the watershed.

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